

# NAVY MEDICINE MAGAZINE

THE OFFICIAL SITE OF U.S. NAVY AND MARINE CORPS MEDICINE NEWS

NEWS   FEATURES   A LOOK BACK   SCRUBBING IN   I AM NAVY MEDICINE



NAVY MEDICINE IN FOCUS

## Joint Army-Navy project measures effects of blast overpressure

BY VJOHNSON – APRIL 24, 2014

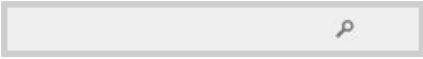
POSTED IN: FEATURES

By Ben Sherman, Fort Sill Cannoneer

FORT SILL, Okla. – The Army and Navy are working on a joint research project to measure the effects of concussion, traumatic brain injury and blast events on military personnel. One area of research is the measurement of blast overpressure, especially related to field artillery, both during combat and training.



Dr. Gary Kamimori, (right) research physiologist from Walter Reed Army Institute of Research, works with Scott Featherman, from BlackBox Biometrics, to troubleshoot some issues with their test equipment during field tests at Fort Sill, Okla. The tests were conducted to gather data about blast overpressure and acceleration, and assess the effects of repeated artillery fire on



### Recent Posts

- [I AM NAVY MEDICINE](#)
- [‘Unwavering Strength’ for a New Year, New You](#)
- [I AM NAVY MEDICINE](#)
- [Independent Duty Corpsman – A Specialized Lifesaver](#)
- [NAVY MEDICINE IN FOCUS](#)

### Recent Comments

- Jami Mesgar on [‘Unwavering Strength’ for a New Year, New You](#)
- Chuck Bryan on [I AM NAVY MEDICINE](#)
- Richard G. Shuster on [A brief history of the U.S. Navy Independent Duty Corpsman](#)
- Anna Schwarz on [I AM NAVY MEDICINE](#)
- Shannon Dittlinger on [I AM NAVY MEDICINE](#)

### Archives

- [January 2015](#)
- [December 2014](#)
- [November 2014](#)
- [September 2014](#)
- [August 2014](#)
- [July 2014](#)
- [June 2014](#)
- [May 2014](#)
- [April 2014](#)
- [March 2014](#)
- [February 2014](#)
- [January 2014](#)
- [December 2013](#)
- [November 2013](#)
- [October 2013](#)

### Categories

- [A LOOK BACK](#)
- [FEATURES](#)
- [I AM NAVY MEDICINE](#)
- [NAVY MEDICINE IN FOCUS](#)

soldiers. (Photo by Ben Sherman)

A research team recently visited Fort Sill to conduct testing and gather data from live-fire exercises conducted by “Big Deuce,” the 2nd battalion, 2nd Field Artillery brigade on the east range here.

“We’re working with the Walter Reed Army Institute of Research (WRAIR) to evaluate different types of blast sensors in the training environment,” said Navy Lt. Uade Da Silva, a research scientist from the Naval Medical Research Center. “These types of sensors have been deployed in Afghanistan for about a year.”

WRAIR is a subcommand of the U.S. Army Medical Research and Materiel Command, which focuses on medical research, development, acquisition and medical logistics management worldwide.

Blast overpressure (BOP) is the pressure caused by a shock wave over and above normal atmospheric pressure. The source of the shock wave can be a sonic boom or an explosion or the firing of a weapon such as a cannon.

“The effects of blast overpressure from firing a howitzer can have the same effect as an explosion or even a non-combat blow to the head,” said Army Lt. Col. Chris Compton, 2-2nd FA battalion commander. “We’re shooting a mid-level charge today out of a 105mm gun, and you can calculate the greater effects of the higher charges we shoot from the 155mm guns.”

Dr. Gary Kamimori, a WRAIR research physiologist, worked with his team to set up devices to measure the effects of blast overpressure.

“The Soldiers are wearing the Gen. 2 helmets with acceleration sensors built into them and a blast gauge developed by DARPA (Defense Advanced Research Projects Agency),” Kamimori said. “Our focus is to determine what Soldiers in the training venues need because of the BOP they receive almost every day. That’s what the DARPA blast gauge measures. The Gen. 2 gauge measures acceleration, such as the effect of an IED (improvised explosive device) blast inside a vehicle, or a Soldier being blown back in different situations.”

The live-fire exercise was conducted in March on a 40-degree day, in the rain and with a 25 mph wind. It was just another day on the range for the “Big Deuce” Soldiers, but it presented challenges for the research team.



Cannon crewmembers from the 2-2nd FA brigade fire a 105mm howitzer on the east range at Fort Sill, Okla. The live fire exercise was part of a research project to measure blast overpressure from the howitzer. Blast sensors were placed on the soldiers, equipment and at a 25-foot radius to measure blast pressure. (Photo by Ben Sherman)

“The weather is not cooperating with us, but that’s actually a good thing, because it makes the testing environment real world. It helps us know if wearing extra clothing changes the way a blast affects the Soldier,” Kamimori said. “The fires team said they were good to go as long as they could see what they were shooting at, and the sensors work in the rain and cold. However, the weather has caused some issues with our test equipment. They’re built more for the lab environment than being out here, but we are making it work and recording data.”

A number of sensors were placed in a 25-foot radius from the howitzer. This allowed the blast wave coming from the weapon to be measured in different directions. Another goal of the study was to measure blast exposure based on different crew positions around the gun when it was fired. Each cannon crewmember wears pressure sensors mounted on the front of their armored vests, on their shoulder and on the back of their helmets. The blast sensor trigger levels are set high enough to register larger blast levels, but not pick up small arms fire or other loud sounds.

“We want to see how effective these sensors are in the artillery environment, and if the body-worn sensors and the helmet sensors are useful in measuring the acceleration and the overpressure the Soldiers are exposed to,” Da Silva said.

Da Silva said the researchers expect these sensors to work for several months of continuous recording and can be checked in the field at different times using a small handheld computer. Sensors have a three-light indicator system – red, yellow or green that can indicate different pressure levels.

“We have come to realize that this kind of concussion can be a cumulative component of TBI (traumatic brain injuries). Often Soldiers won’t tell the medics that they’ve been shook up, or they honestly don’t know how hard they

- [NEWS](#)
- [SCRUBBING IN](#)

Meta

- [Log in](#)
- [Entries RSS](#)
- [Comments RSS](#)
- [WordPress.org](#)

were banged around," Da Silva added.

Compton emphasized how important testing like this can be to develop better technology to treat Soldiers.

"The data they measure out here will tell us how good the equipment is now, and that may lead to development of better equipment down the road," Compton said.



About vjohnson